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UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PUBLIC ROADS
DIVISION OF AGRICULTURAL ENGINEERING

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M O N T H L Y N E W S L E T T E R

Washington, May 20, 1930.

During the latter part of April and the first part of May S. H. McCrory and L. A. Jones made a trip of inspection to the soil erosion experiment farms located at Tyler and Temple, Texas, Guthrie, Oklahoma, Hays, Kansas, and Bethany, Mo. C. E. Ramser accompanied them during a part of the trip. At Bethany they conferred with Claude K. Shedd and with Professor J. C. Wooley of the Missouri Agricultural College. They next visited D. L. Yarnell at Iowa City. Mr. Jones later visited W. D. Ellison at Bowling Green, Ohio to confer with him regarding the run-off investigations under his charge in Ohio. Mr. Jones also made a brief trip to Statesville and Raleigh, N. C. in connection with the soil erosion investigations in that State.

On May 23 the Advisory Council on Research in Farm Structures will meet in Chicago. S. H. McCrory and M. C. Betts will represent this Division. Among the other organizations which are expected to send representatives to the meeting are the American Farm Bureau Federation, The American Society of Agricultural Engineers, the National Association of Farm Equipment Manufacturers, the National Grange and the Portland Cement Association. At this meeting reports will be made of the progress of research in farm structures by various agencies and plans will be made for future work along this line.

On May 27 the Advisory Council on Research in Mechanical Farm Equipment will meet in Washington. This council, which was set up several years ago, is composed of representatives of the National Association of Farm Equipment Manufacturers, the American Society of Agricultural Engineers and the United States Department of Agriculture. Its purpose is similar to that of the council on farm structures outlined above.

F. O. Bartel, who is in direct charge of the soil erosion work in North Carolina, has recently submitted a progress report of the soil erosion plot experiments at Raleigh covering two years work. These plots are so arranged that the run-off and erosion are caught in tanks and can thus be determined volumetrically. Different cultural treatments are given to the crops grown on the plots and their effects noted. These experiments have been in progress for five years and have yielded some interesting results.

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W. D. Ellison is on a trip through a portion of Ohio for the purpose of obtaining photographs of ditch blasting operations and to secure data in connection with run-off investigations in Ohio.

D. L. Yarnell is testing a new silt-sampling device designed by Mr. Ramser. This device consists of a settling basin in which the coarser sediment is caught, and a rectangular weir at the lower end of the basin which allows most of the water to waste away but passes a definite proportion into a second settling basin where much of the finer sediment is caught. A definite proportion of the water leaving this basin is also caught and retained for final silt determination. Above the silt sampling device a Parshall measuring flume is installed which measures the volume of the run-off water. It is hoped by means of this device to determine quite definitely the amount of soil carried away by the run-off water from the drainage area tributary to the sampling device.

W. M. Hurst will have charge of a hay and forage drying experiment at Jeanerette, La. this being a cooperative project with the Bureaus of Plant Industry and Animal Industry. In the region around Jeanerette efforts are being made to expand the dairy industry but one of the difficulties has been to secure a satisfactory supply of forage. A number of new forage plants have been developed which give considerable promise if they can be cured but it seems impossible to do this satisfactorily without artificial curing. It is planned to build a semi-commercial drier at Jeanerette for use in the experiment.

M. A. R. Kelley is leaving this week for Madison, Wis. to make a study in cooperation with Professor E. R. Jones of the University of Wisconsin and with the Forest Products Laboratory of the Forest Service, of the failures of barn roofs, the best means of repairing damaged roofs and the avoidance of the recurrence of such failures.

Later Mr. Kelley will make a trip through Illinois and Iowa to obtain material for a report on grain storages in the corn belt.

M. C. Betts and T. A. H. Miller are preparing plans for a poultry laboratory at the Beltsville Experiment Farm; also for three small houses for the Sugar Plant Division of the Bureau of Plant Industry at Canal Point, Fla.

A. H. Senner is making a study of the heating plant of the Arlington Experiment Farm with a view to increasing its capacity. This will be done by converting the present gravity return system to a vacuum return system.

Upon request of California State officials, A. T. Mitchelson and C. A. Taylor spent three days in making tests of penetration of rainfall on the floor of Santa Clara Valley, in the vicinity of San Jose, Calif., using the compressed air unit developed by Messrs. Blaney and Taylor,

for taking soil samples. The soil on the valley floor is generally of a loam or heavier texture. Plant roots penetrate to considerable depths and create a large deficiency in soil moisture at the end of the summer season. This is especially true in deciduous orchards, which predominate on the valley floor. Studies made a few years ago by F. J. Veihmeyer of soil moisture conditions in that vicinity indicated that the fall deficiency in soil moisture below field capacity in mature prune orchards is very close to 12 acre-inches per acre in the upper 12 feet of soil. Cover crops are usually grown during the winter, and the loss by evaporation and transpiration during the rainy season is probably not less than 8 acre-inches per acre. It appeared, therefore, that upwards of 20 inches of rain would be required before direct penetration of rain would be at all likely to occur in the deciduous orchards of the area. It was intended that samples be obtained to depths of 24 feet, but this was not always possible, as rock fragments were usually encountered. The 31 samples taken showed that normal rainfall on the Santa Clara Valley floor does not contribute materially to the underground water supply by direct penetration through the root zone, and that while a few heavily irrigated orchards were found to be wet through the full depth of the root zone, much of the deep percolation should be charged to return waters resulting from over-irrigation. Cover crops that are left until late in March consume a large amount of moisture, it being estimated that some of the cover crops use upwards of 3.0 acre-inches per acre per month in the late spring. Recommendations embodied in the brief report on this study were to the effect that considering the depth of soil, the deep rooted crops, and the flat topography, irrigation practice should be such that practically all of the normal rainfall available for storage will be held within the root zone; and that a more beneficial use of the water supply from rainfall should be secured by discing in the cover crops earlier, even though it resulted in the loss of some fertilization.

W. W. McLaughlin, Fred C. Scobey, R. L. Parshall, H. F. Blaney, A. A. Young and M. R. Lewis attended the spring meeting of the American Society of Civil Engineers at Sacramento, Calif. April 23 and 24. Mr. Scobey, as Chairman of the Irrigation Division, presided at the sessions of that Division.

R. G. Hemphill has been granted a furlough to recuperate from an illness which has necessitated his confinement in a hospital for some weeks past.

Dr. Elwood Mead, Chief of the Bureau of Reclamation, was a visitor at the Berkeley office April 16.

W. W. McLaughlin and Wells A. Hutchins left the Berkeley office for Oregon the latter part of April to cooperate with the State Agricultural College and State Engineer's office in completing the economic and feasibility studies in the irrigation district rehabilitation program of the State of Oregon. Incident to the field trip to Oregon, Mr. McLaughlin attended the Pacific Coast meeting of the American Society of Agricultural Engineers at Corvallis May 2 and 3.

Plans and specifications for the third unit of the Bear Bay Migratory Bird Refuge now in course of construction under the supervision of L. M. Winsor, were completed and have been sent to Washington for final approval. It is expected the contract for this work will be let during the present fiscal year. Work under the first contract, covering units 1 and 2, is well under way and unit 1 should be in operation early this fall.

The Berkeley office has been requested to prepare plans and specifications for a reservoir and irrigation system in connection with the Great Plains Station of the Bureau of Plant Industry at Cheyenne, Wyoming. Carl Rohwer will have immediate supervision of this work as well as of construction.

In December, 1929, the Special Committee on Irrigation Hydraulics of the American Society of Civil Engineers, unanimously adopted a resolution proposing to change the name of the measuring device developed by R. L. Parshall from "Improved Venturi Flume" to "Parshall Measuring Flume." The matter was referred to Clemens Herschel, inventor of the Venturi meter for his opinion regarding the proposed change. Mr. Herschel replied "I am glad to have the opportunity to say that I consider the action of the Committee extremely well founded. Or, to put it another way, the Society should hasten to take the opportunity to be fair to all concerned by markedly and officially designating this measuring device as the "Parshall Measuring Flume" (and nothing else)."

The following publications have recently been issued or will be available in the near future:

Commercial Irrigation Companies. By Wells A. Hutchins. Tech. Bul. 177.

Factors Affecting the Mechanical Application of Fertilizers to the Soil. By A. L. Mehring and Glenn A. Cumings. Tech. Bul. 182.

Erosion and Silting of Dredged Drainage Ditches. By C. E. Ramser. Tech. Bul. 184.

Irrigation Requirements of the Arid and Semiarid Lands of the Southwest. By Samuel Fortier and A. A. Young. Tech. Bul. 185.

Ventilation of Farm Barns. By M. A. R. Kelley. Tech. Bul. 187.